

Outlook



Washington
University in St. Louis

SCHOOL OF MEDICINE

WINTER 2022-23

EQUITY IN
Alzheimer's
treatment



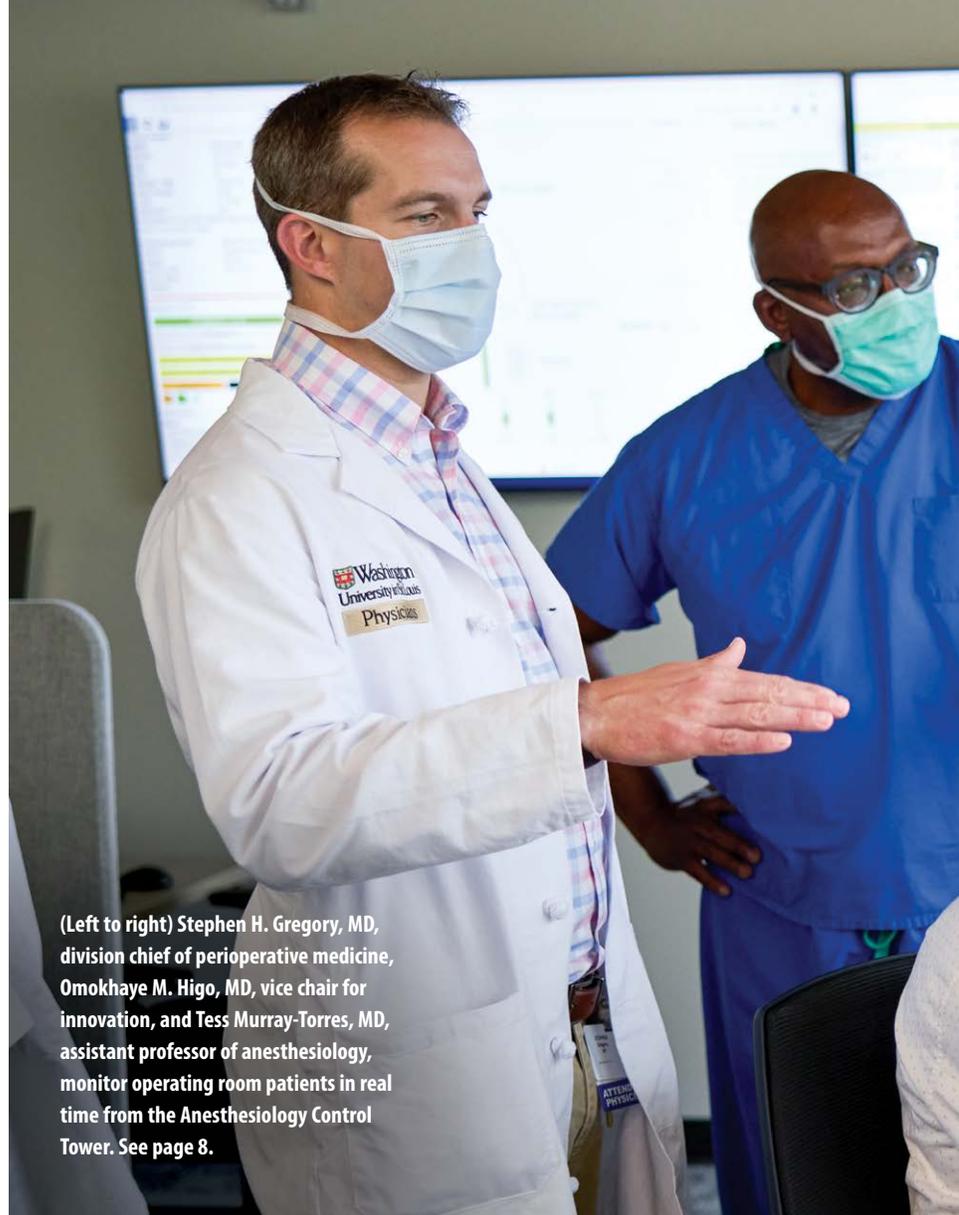
Outlook

Washington University School of Medicine
OUTLOOK.WUSTL.EDU WINTER 2022-23

MATT MILLER



COVER Collins E. Lewis, MD, an associate professor emeritus of psychiatry, has served as a healthy volunteer in several Alzheimer's clinical trials and is a member of the African American Advisory Board for the Knight Alzheimer Disease Research Center, where he counsels research teams on ways to encourage participation of Black people in research studies. See page 14.



(Left to right) Stephen H. Gregory, MD, division chief of perioperative medicine, Omokhaye M. Higo, MD, vice chair for innovation, and Tess Murray-Torres, MD, assistant professor of anesthesiology, monitor operating room patients in real time from the Anesthesiology Control Tower. See page 8.

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BERNARD BECKER MEDICAL LIBRARY

Ericka V. Hayes, MD '98, the new president of the Medical Center Alumni Association, during her time as a fellow. See page 25.



MATT MILLER

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Photos of unmasked people in this magazine were taken prior to the COVID-19 pandemic or in accordance with School of Medicine masking protocols at that time.

BETH ANGLIN

This street is named in honor of two St. Louis pediatricians who had an immeasurable impact on the health and well-being of children in St. Louis. Nash Way honors beloved physicians Dr. Helen E. Nash, the first Black woman to join the staff at St. Louis Children's Hospital and the faculty of Washington University School of Medicine; and Dr. Homer E. Nash Jr., a fellow physician at Children's, as well as a clinical professor of pediatrics. The two followed in the footsteps of their father, Dr. Homer E. Nash Sr., who practiced medicine in Atlanta. The family, whose legacy continues to define pediatric care in St. Louis, is legendary for its commitment to improving the lives of young St. Louisans, particularly the underserved. The Nashes, through their dedication and constant advocacy, forever changed this city for the better.

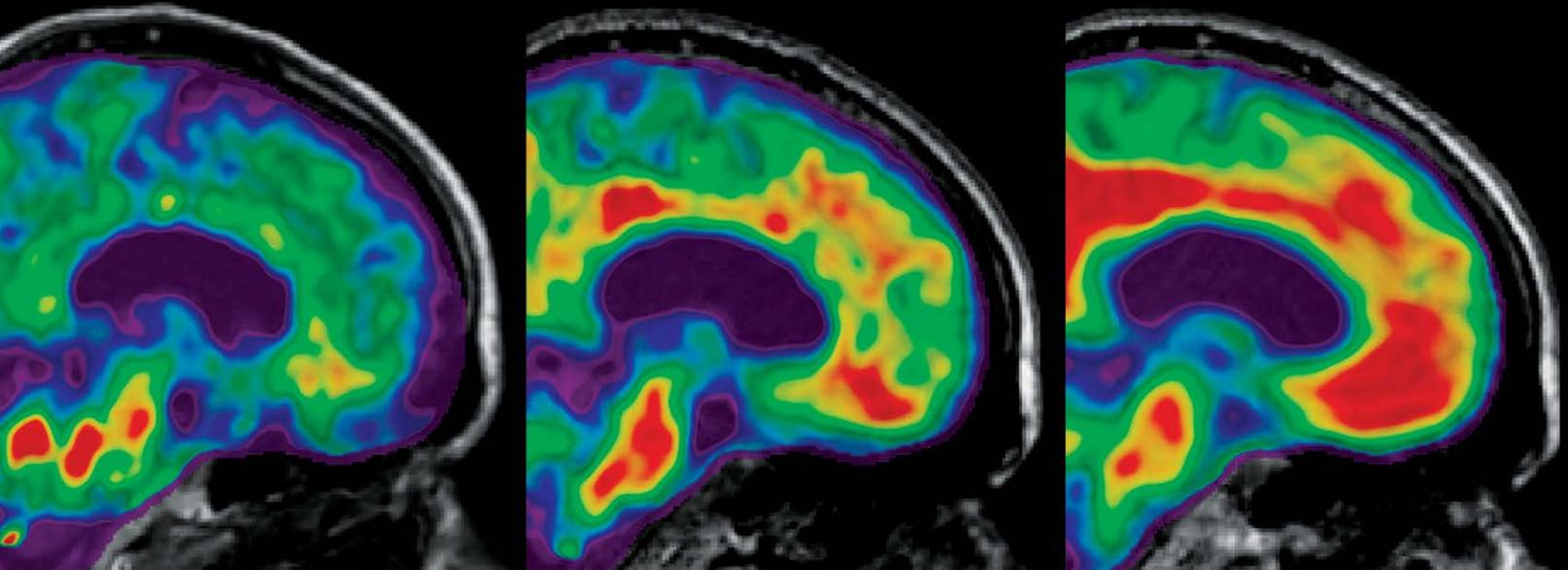
Helen E. Nash
1921 - 2013

Established 2022

Homer E. Nash Jr.
1925 - 2022

A street on the Medical Campus has been named **Nash Way** in honor of sibling pediatricians **Helen E. Nash, MD, and Homer E. Nash Jr., MD.** (Left) An artist's concept of a plaque to commemorate the renaming. See page 21.

An Alzheimer's disease patient's brain scans taken over several years — from cognitively normal (left) to cognitive impairment (right). Yellow, orange and red areas reflect the spread of amyloid beta in the brain.



WashU Medicine, Eisai form collaboration

Focus is on therapies for Alzheimer's, other neurodegenerative diseases

Washington University School of Medicine and the pharmaceutical company Eisai Co. Ltd., headquartered in Japan, have formed a research collaboration aimed at developing new treatments for Alzheimer's disease, Parkinson's disease and other neurodegenerative conditions. The two organizations previously have partnered on Alzheimer's clinical trials.

The collaboration brings together Washington University's extensive expertise in research focused on neurodegenerative diseases, with Eisai's broad experience in drug discovery. Over the next five years, the aim is to create multiple novel therapeutic candidates and identify novel biomarkers of neurodegeneration.

The Eisai collaboration is part of the School of Medicine's effort to pivot toward drug development while also

maintaining its distinction as a neuroscience research powerhouse.

Alzheimer's will be a major area of focus for the new collaboration. Washington University researchers lead the international Knight Family Dominantly Inherited Alzheimer Network Trials Unit, which launched the world's first Alzheimer's prevention trial in 2012 to evaluate whether drugs targeting the protein amyloid beta can slow or prevent dementia onset in people genetically predisposed to develop the disease at a young age. Last year, the trial was expanded to evaluate drugs targeting another protein, tau — closely associated with neurodegeneration in Alzheimer's — alongside anti-amyloid drugs.

Participants in the trial's experimental group are receiving a combination of two investigational drugs made by Eisai — the tau drug E2814 and the amyloid drug

lecanemab, which was approved by the FDA in January. In September, Eisai announced the results of a separate clinical trial showing that lecanemab slowed memory loss and cognitive decline by 27% in people with mild cognitive impairment or mild dementia due to Alzheimer's disease. Known as Clarity AD, the trial was conducted at sites in Japan, Europe, China and the U.S., including at Washington University.

The collaboration also creates an opportunity to build on Eisai's and Washington University's mutual interest in the science of sleep. Using in-house expertise, Eisai researched and developed lemborexant, a drug approved by the Food and Drug Administration for treatment of insomnia. Washington University researchers have been at the forefront of research untangling the role of sleep in Alzheimer's and other neurodegenerative conditions.

Four elected to National Academy of Medicine

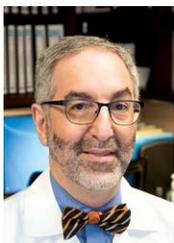
Four School of Medicine faculty members have been elected to the National Academy of Medicine, a part of the National Academy of Sciences. Membership in the academy is considered one of the highest honors in the fields of health and medicine, and recognizes individuals who have demonstrated outstanding professional achievement and commitment to service.



Opeolu M. Adeoye, MD, is the BJC HealthCare Distinguished Professor of Emergency Medicine and head of the Department of Emergency Medicine. He specializes in understanding acute brain injuries, with a particular focus on improving therapies and long-term outcomes for patients who have suffered strokes.



Farshid Guilak, PhD, is the Mildred B. Simon Research Professor of Orthopaedic Surgery and co-director of the Washington University Center of Regenerative Medicine. He specializes in the study of arthritis, working to uncover factors that contribute to the onset and progression of the disorder, with an eye toward developing new drugs and stem cell therapies that may be used as treatments.

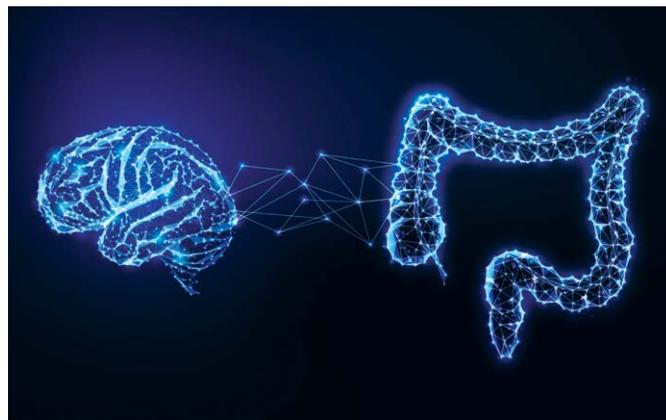


David H. Gutmann, MD, PhD, is the Donald O. Schnuck Family Professor in the Department of Neurology. He is an international authority in neurofibromatosis cancer predisposition syndromes, complex genetic disorders that cause tumors to grow on nerves in the brain and throughout the body.



Jonathan Kipnis, PhD, is the Alan A. and Edith L. Wolff Distinguished Professor of Pathology & Immunology and a BJC Investigator. He is an internationally recognized scientific leader in how the nervous and immune systems interact in neurodegenerative, neuroinflammatory and neurodevelopmental disorders. His work uncovered an unexpected mechanism by which the immune system influences brain function.

To learn more about stories in Pulse, go to medicine.wustl.edu/news



GETTY IMAGES

Gut bacteria produce compounds that influence the behavior of immune cells, including those that can cause neurodegeneration.

Gut bacteria affect brain health, mouse study shows

A growing pile of evidence indicates that the tens of trillions of microbes that normally live in our intestines — the so-called gut microbiome — have far-reaching effects on how our bodies function. Now, a new study details how the gut microbiome plays a key role in the health of our brains.

The study, in mice, found that gut bacteria — partly by producing compounds such as short chain fatty acids — affect the behavior of immune cells throughout the body, including ones in the brain that can damage brain tissue and exacerbate neurodegeneration in conditions such as Alzheimer's disease. The findings suggest a new approach to preventing and treating neurodegenerative diseases by modifying the gut microbiome with antibiotics, probiotics, specialized diets or other means.

"We gave young mice antibiotics for just a week, and we saw a permanent change in their gut microbiomes, their immune responses, and how much neurodegeneration related to a protein called tau they experienced with age," said senior author David M. Holtzman, MD, the Barbara Burton and Reuben M. Morriss III Distinguished Professor of Neurology. "What's exciting is that manipulating the gut microbiome could be a way to have an effect on the brain without putting anything directly into the brain."

To determine whether the gut microbiome may be playing a causal role, the researchers altered the gut microbiomes of mice predisposed to develop Alzheimer's-like brain damage and cognitive impairment.

Along with Holtzman, the research team included gut microbiome expert and co-author Jeffrey I. Gordon, MD, the Dr. Robert J. Glaser Distinguished University Professor and director of the Edison Family Center for Genome Sciences & Systems Biology; first author Dong-Oh Seo, PhD, an instructor in neurology; and co-author Sangram S. Sisodia, PhD, a professor of neurobiology at the University of Chicago.

 Science | Jan. 13, 2023

MATT MILLER



MODEL PROGRAM The U.S. Department of Labor recently recognized Washington University’s medical assistant apprenticeship program as an “ambassador.” The program will share its experiences through a national network and collaborate with the labor department to expand apprenticeship opportunities. The university launched its program in 2018 to spur interest and fill crucial medical assistant jobs with people who otherwise might not be able to access such training. (Above center) Kathy Clark, manager of medical apprenticeships, demonstrates how to take blood pressure to apprentices Kololia Beckmann (left) and Adriana West.

Making fentanyl less lethal, less addictive

Fentanyl, a powerful opioid pain reliever, is the leading cause of U.S. overdose deaths. With the aim of improving the drug’s safety profile to make it less lethal and addictive without eliminating its ability to alleviate pain, a research team, led by scientists at the Center for Clinical Pharmacology at the School of Medicine and the University of Health Sciences & Pharmacy in St. Louis, have altered the drug’s chemical properties and the way that it binds to opioid receptors on nerve cells.



GETTY IMAGES

Their studies, conducted in mice and in cell lines expressing the opioid receptor, indicate that the modified drug still is an effective pain reliever but likely doesn’t have as many potentially deadly side effects. Although more studies are needed in additional animal models and in people, the research holds promise for developing safer opioid drugs.

“Opioids, including fentanyl, are among the most effective pain-relieving drugs we have, but they also have led to too many accidental deaths, a situation that is simply tragic,” said the paper’s corresponding author, Susruta Majumdar, PhD, an associate professor of anesthesiology at Washington University and an associate professor of medicinal chemistry & pharmacology at the University of Health Sciences & Pharmacy.

Like heroin and oxycodone, fentanyl binds to the mu-opioid receptor on nerve cells. Once nestled into the receptor, drugs such as fentanyl relieve pain but also can lower blood pressure and slow breathing, potentially leading to respiratory distress and even death. Other side effects include euphoria, dizziness, confusion and sedation. Because of its potency, fentanyl is especially lethal, even in very small amounts.

The researchers developed a drug variation that binds to the mu-opioid receptor and also engages a sodium ion binding site present in the receptor. Engaging the sodium binding site as a target slightly altered the pathway through which fentanyl acts to combat pain.

 Nature | Nov. 30, 2022

MATT MILLER



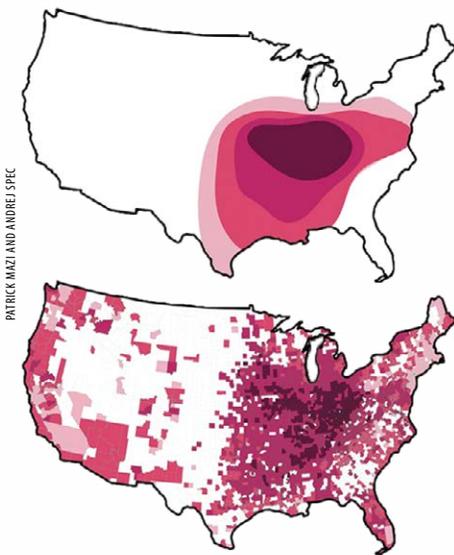
BECKIE GUILLOT-BEYNE

MATT MILLER



CONGRATULATIONS to the 124 students who donned their white coats for the first time in October. The White Coat Ceremony signifies their entry into the medical profession. Above, students expressed gratitude to loved ones and celebrated as a class.

Soil fungi cause lung infections nationwide



The fungus *Histoplasma*, which causes lung infections, was concentrated in the Midwest in the 1950s and 60s (top map), but now causes significant disease throughout much of the country (bottom).

Fungi in the soil cause a significant number of serious lung infections in 48 out of 50 states and the District of Columbia, including many areas long thought to be free of deadly environmental fungi, according to a School of Medicine study.

Studies from the 1950s and 60s indicated that fungal lung infections were a problem only in certain parts of the country. The new study shows that is no longer the case. Doctors who rely on outdated maps of disease-causing fungi may miss the signs of a fungal lung infection, resulting in delayed or incorrect diagnoses, the researchers said.

Histoplasma, or histo, is one of the three main species of soil fungi that cause lung infections in the U.S. Historically, *Histoplasma* was found in the Midwest and parts of the East, *Coccidioides* in the Southwest, and *Blastomyces* in the Midwest and the South. But a growing number of case reports and anecdotes suggest

that all three have expanded out of their traditional ranges in recent decades, most likely due to climate change.

Fungal lung infections easily can be mistaken for bacterial or viral lung infections such as COVID-19, bacterial pneumonia and tuberculosis.

“People with fungal lung infection often spend weeks trying to get the right diagnosis and appropriate treatment, and the whole time they’re feeling terrible,” said lead author Patrick B. Mazi, MD, a clinical fellow in infectious diseases. “They usually have multiple health-care visits with multiple opportunities for testing and diagnosis, but the doctor just doesn’t consider a fungal infection until they’ve exhausted all other possibilities.”

The researchers calculated the number of fungal lung infections nationwide from 2007 to 2016 using Medicare fee-for-service claims.

 Clinical Infectious Diseases | Nov. 11, 2022

Exercise didn't improve brain function in seniors

A large study that focused on whether exercise and mindfulness training could boost cognitive function in older adults found no such improvement following either intervention. Researchers at the School of Medicine and the University of California, San Diego, studied the cognitive effects of exercise, mindfulness training or both for up to 18 months in older adults who reported age-related changes in memory but had not been diagnosed with any form of dementia.

“We know beyond any doubt that exercise is good for older adults, that it can lower risk for cardiac problems, strengthen bones, improve mood and have other beneficial effects — and there has been some thought that it also might improve cognitive function,” said the study’s first author, Eric J. Lenze, MD, the Wallace and Lucille Renard Professor and head of the Department of Psychiatry at Washington University. “Likewise, mindfulness training is beneficial because it reduces stress,

and stress can be bad for your brain. Therefore, we hypothesized that if older adults exercised regularly, practiced mindfulness or did both there might be cognitive benefits — but that’s not what we found.”

The participants were randomly assigned to one of four groups: those working with exercise instructors; those supervised by experts in the practice of mindfulness; those participating in regular exercise and mindfulness training; or those doing neither, but meeting for occasional sessions focused on general health education.

The researchers studied 585 adults ages 65 through 84, conducting memory tests and brain scans at the outset and again at six months and at 18 months. Findings were similar across time points.

Lenze said the findings do not mean exercise or mindfulness training won’t help improve cognitive function in any older adults, only that those practices don’t appear to boost cognitive performance in healthy people without impairments.



The researchers received National Institutes of Health (NIH) funding to follow the same group of people for five more years to learn whether exercise and mindfulness training might help slow or prevent future cognitive declines.

 JAMA | Dec. 13, 2022



Cancer therapy applied to autoimmune disease

The cancer therapy known as CAR-T has revolutionized treatment of some blood cancers since it was introduced in 2017. The therapy uses genetically altered immune cells to home in on cancer cells and destroy them.

Now, studying mice with an autoimmune disease similar to multiple sclerosis (MS), School of Medicine researchers have shown that the same approach can be used to eliminate unwanted cells that cause autoimmunity.

MS is marked by rogue T cells that trigger the destruction of myelin, the protective covering over nerves. Immunosuppressive drugs can quash the self-destructive activity of rogue T cells, but such drugs also suppress helpful T cells and put people at risk of severe infections.

In CAR-T cancer therapies, doctors take a patient's own T cells, modify them to recognize and attack his or her specific cancer, and then put them back in the body on a seek-and-destroy mission. Inspired by this approach, the researchers designed a molecule by combining a fragment of a protein found in myelin with a protein that activates T cells. Then, they loaded the bait molecule onto a kind of T cell known as killer T cells. Any rogue T cells that took the bait would be eliminated by the killer T cells.

"We were able to use CAR-T cells to eliminate just the immune cells that are causing the autoimmunity and not other immune cells you might need to protect against viruses or other infection," said co-senior author Chyi-Song Hsieh, MD, PhD, the Alan A. and Edith L. Wolf Professor of Rheumatology and a professor of medicine and of pathology & immunology. "Our CAR-T cells were very effective at treating mice that have an MS-like disease."

 Science Immunology | Oct. 7, 2022

Pediatric, primary care access increases

Washington University School of Medicine is known worldwide for its excellent specialty-care physicians, but people may be unaware that the school also offers a growing network of exceptional pediatric and primary care physicians in communities across the region.

Launched in 2004 with one adult internal medicine practice, the Washington University Clinical Associates (WUCA) network now includes 23 practices with 116 health-care providers, including doctors, nurse practitioners and physician assistants.

With Missouri locations as far west as Wentzville and as far south as Arnold, WUCA offers patients the opportunity to obtain primary care closer to their homes as part of a close-knit network that provides easy referrals to Washington University specialists and BJC HealthCare's network of hospitals.

Designed from the start as a flexible and supportive partnership, the arrangements offer community-based doctors the benefits of becoming WUCA employees while also maintaining leadership and managerial oversight over the day-to-day operations of their practices.

"Washington University Clinical Associates is dedicated to providing primary care physicians with the business infrastructure and administrative support necessary to ensure their community-based practices remain successful," said Paul J. Scheel Jr., MD, vice chancellor for clinical affairs and CEO of Washington University Physicians, the school's faculty practice, and president of WUCA.

"There's a shortage of primary care physicians across the nation, especially in underserved areas," Scheel said. "These WUCA partnerships are helping primary care physicians to stay in their local markets, to invest in and grow their practices and to continue providing vital front-line health care to patients living nearby."

WUCare, one of the practices in the WUCA network, is solely dedicated to providing high-quality primary care to Washington University employees and their families (ages 18 and older) who are enrolled in the university-sponsored health plan (United Healthcare).



Adam Eaton, MD, sees patient Sawyer Gullett, 3, at Blue Fish Pediatrics, a member of the growing Washington University Clinical Associates.

Dry eye disease alters how the eye's cornea heals

People with a condition known as dry eye disease are more likely than those with healthy eyes to suffer injuries to their corneas. Studying mice, School of Medicine researchers have found that proteins made by stem cells that

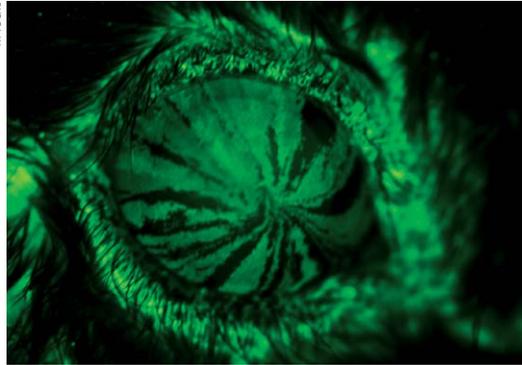
regenerate the cornea may be new targets for treating and preventing such injuries.

An estimated 15 million people in the U.S. alone endure eye pain and blurred vision as a result of complications and injury associated with dry eye disease. Those with the disorder use various types of drops to replace missing natural tears and keep the eyes lubricated.

"We have drugs, but they only work well in about 10% to 15% of patients," said senior investigator Rajendra S. Apte, MD, PhD, the Paul A. Cibis Distinguished Professor in the John F. Hardesty, MD, Department of Ophthalmology & Visual Sciences.

The researchers analyzed genes expressed by the cornea in several mouse models — not only of dry eye disease, but also of diabetes and other conditions. They found that in mice with dry eye disease, the cornea activated expression of the gene *SPARC*. They also found that higher levels of *SPARC* protein were associated with better healing.

"These stem cells are important and resilient and a key reason corneal transplantation works so well," Apte explained. "If the proteins we've identified don't pan out as therapies to activate these cells in people with dry eye syndrome, we may even be able to transplant engineered limbal stem cells to prevent corneal injury in patients with dry eyes."



Researchers track the movements of stem cells (in fluorescent green) in a mouse eye.

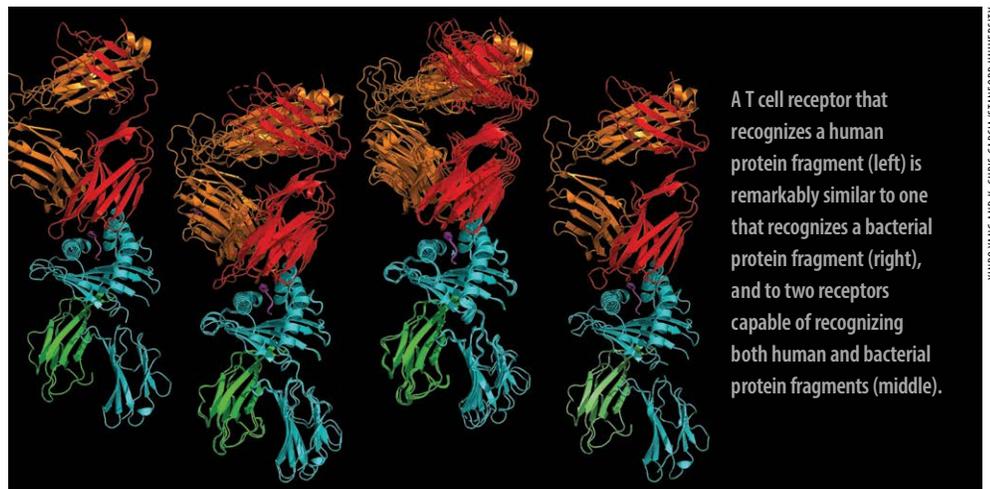
 **Proceedings of the National Academy of Sciences** | Jan. 2, 2023

Evidence of autoimmunity's origins uncovered

Autoimmune diseases are thought to be the result of mistaken identity. Immune cells on patrol, armed and ready to defend the body against invading pathogens, mistake normal human cells for infected cells and turn their weapons on their own healthy tissues. In most cases, though, finding the source of the confusion — the tiny fragment of normal human protein that looks dangerously similar to a protein from a pathogen — has been challenging for scientists. That missing piece of the puzzle has hampered efforts to develop effective diagnostics and specific therapies for many autoimmune conditions.

That finally may be changing. A team involving researchers from the School of Medicine, Stanford University School of Medicine and Oxford University has developed a way to find crucial protein fragments that drive autoimmunity, as well as the immune cells that respond to them. The findings open a promising pathway to diagnose and treat autoimmune diseases.

"Of all genes, the HLA genes have the greatest amount of variation across the human



A T cell receptor that recognizes a human protein fragment (left) is remarkably similar to one that recognizes a bacterial protein fragment (right), and to two receptors capable of recognizing both human and bacterial protein fragments (middle).

population. There are many, many autoimmune diseases that are associated with specific variants of the HLA genes, and in most cases we don't know why," said co-corresponding author Wayne M. Yokoyama, MD, the Sam J. Levin and Audrey Loew Levin Professor of Arthritis Research at Washington University.

"This paper outlines a strategy for figuring out why certain HLA variants are linked to certain diseases. It also provides strong

evidence that cross-reactivity between human and microbial proteins drives autoimmunity in at least two diseases (ankylosing spondylitis and acute interior uveitis) and probably many others. Now that we understand the underlying drivers, we can start focusing on the approaches that are most likely to yield benefits for patients," he added.

 **Nature** | Dec. 7, 2022

A watchful eye

Control tower helps detect emergencies before they arise

BY ADAM LIEBENDORFER

Linda, to her knowledge, had never been treated with a cephalosporin antibiotic. The 64-year-old could recall a childhood rash her pediatrician had chalked up to “a funny reaction” to penicillin, but as far as she was concerned, she had no known allergies. The day of her surgery, as the Barnes-Jewish Hospital (BJH) operating room team ran through its preoperative checklist, Linda affirmed that she had no known drug allergies. The cephalosporin was administered through the intravenous line.

Minutes later, Linda’s nurse anesthetist spotted a message notification in the electronic medical record from clinicians in the Anesthesiology Control Tower (ACT). The message included an alert that Linda might be at risk for anaphylaxis, a severe allergic reaction.

Sitting buildings away in the ACT, anesthesia clinicians — including an anesthesiologist, a nurse anesthetist, a research specialist, a resident and a student registered nurse anesthetist — remotely monitored BJH operating room (OR) patients. They took the anesthetist’s call and informed him that Linda’s vital signs, coupled with a history of allergic reactions to some antibiotic types, could be consistent with an evolving allergic reaction to the cephalosporin she had received.





During an esophagectomy, anesthesiologist Rashmi Rathor, MD (right), works alongside resident John See, MD, in the operating room, as they incorporate feedback from the ACT into their perioperative treatment plan.



MATT MILLER PHOTOS

Monitoring surgeries from the Anesthesiology Control Tower (left to right): Omokhaye M. Higo, MD, vice chair for innovation, Thaddeus Budelier, MD, program manager for the Perioperative Innovation Center, and Bradley A. Fritz, MD, assistant professor of anesthesiology.

Linda's blood pressure was dropping, and all were worried that she might be experiencing an allergic reaction, with a risk of developing life-threatening anaphylactic shock.

The anesthetist halted the surgery and immediately initiated appropriate, lifesaving treatments for anaphylaxis. Concurrently, the ACT clinicians contacted the rapid-response "firefighter" anesthesiology resident, who was immediately available to provide assistance in the OR where Linda was experiencing the complication.

During emergency situations, the ACT is there to support clinicians in the OR, marshaling an array of on-the-ground resources to assist. Often, this will include a seasoned anesthesiologist.

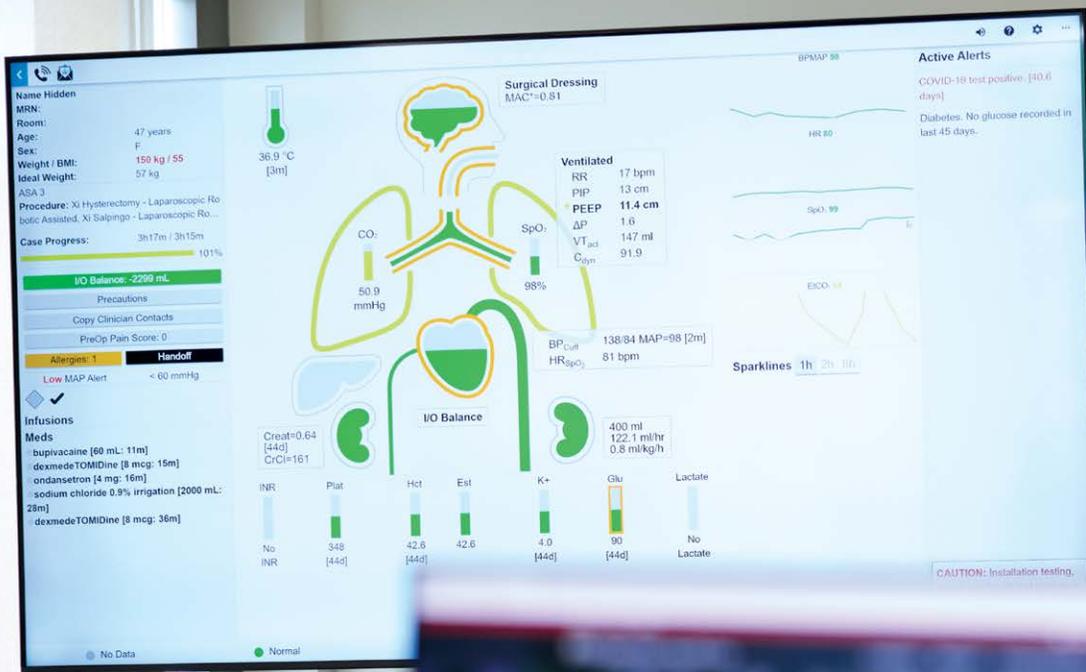
For the past six years, the ACT has provided a watchful eye over 60 operating rooms at Barnes-Jewish Hospital, serving nearly 1,000 patients per week. Like the air traffic control tower (the aviation analog that inspired this initiative), the ACT provides additional sets of eyes to help anesthesia clinicians head off and troubleshoot rare but potentially life-threatening perioperative events that can occur unpredictably.

"With vulnerable patients in many operating rooms and recovery areas, it would be incredibly helpful to be able to remotely detect evolving patient complications, which might not always be detected as early by clinicians in the trenches," said Michael S. Avidan, MBBCh, the head of the Department of Anesthesiology at the School of Medicine and anesthesiologist-in-chief at BJH.

This year, the ACT was expanded into the Perioperative Innovation Center. Located on the 12th floor of the Northwest Tower, the center serves as WashU's hub for new initiatives in anesthesiology telehealth. It houses the ACT and its related evolving program, the Recovery Control Tower, and provides a physical space for innovators to collaborate. The center examines pressing questions in the field of anesthesiology, including how to efficiently deliver quality care as national surgical demand massively increases and the shortage of anesthesia clinicians rapidly worsens. ACT innovators investigate potential solutions to perioperative challenges. The control tower initiative augments perioperative care and enhances patient safety in real time.

"One of the goals of the ACT is to marshal the correct personnel and resources when unexpected events arise," said Thaddeus Budelier, MD, program manager for the Perioperative Innovation Center. "For example, with coordination from the Perioperative Innovation Center, an anesthesia clinician trained to manage complex cardiac disease can be promptly dispatched to noncardiac ORs to perform an echocardiogram, sometimes before a cardiac complication even occurs."

Although anesthesiology care has evolved into a highly precise science that yields prompt responses to an array of potential perioperative complications, some events remain unforeseen. Recent national studies have shown that up to one-fifth of surgical cases feature nonroutine anesthesia events, of which more than 12% are associated with patient injury.



Computer screens show perioperative patients' physiological measurements, including blood pressure, heart rate, temperature, the brain's electrical activity and other vital signs.

Examples of nonroutine events include delays in measuring blood pressure, checking blood glucose or administering blood products.

With the aim of creating a state-of-the-art early warning system, the ACT is harnessing the power of machine learning to detect negative trends in patients' trajectories before they evolve into medical emergencies. "Fields like anesthesiology and critical care are ripe for technological innovations to enhance the work of clinicians," said Avidan, also the Dr. Seymour and Rose T. Brown Professor and a leader in perioperative outcomes research. "There are so many data elements that need to be considered in real time when making critical clinical decisions. Technological augmentation has the potential to improve safety and quality of care for vulnerable patients in complex clinical settings."

Collective expertise

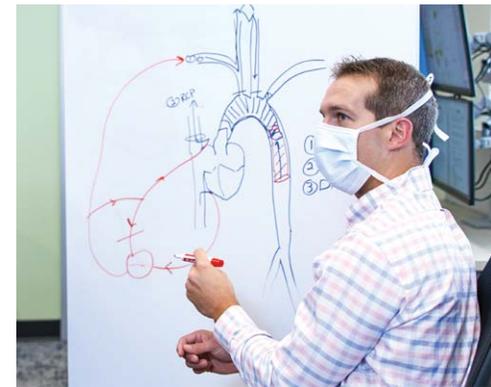
The ACT team concentrates on the real-time data stream from monitors in the ORs, identifying potential risks to patients and considering what measures might be taken to optimize outcomes. It actively assesses rapidly changing physiological measurements, including blood pressure, heart rate, temperature, the brain's electrical activity and other vital signs that anesthesia clinicians monitor during surgeries.

Customized software and the team's collective clinical expertise allows it to home in on issues

that may arise in a way that might be difficult to track for in-the-trenches anesthesia clinicians, who face a dizzying number of updates throughout a case. OR clinicians, for example, might need to call for a blood transfusion to be prepped, adjust the administration of anesthesia medications and manage intraoperative antibiotics, all while communicating with the surgery team, charting and deciphering the information overload from thousands of beeps and dozens of readings.

Caring for the sickest of the sick is often far from routine. Barnes-Jewish Hospital stands as the largest hospital in Missouri, regularly ranking among the top hospitals in the country, and the renowned School of Medicine faculty tackles complex cases from all over the world. Leaders view the ACT as an opportunity to enhance care even further. Washington University leads the push on this front, as the ACT is believed to be the first initiative to combine remote monitoring, telemedicine and machine learning to improve the safety and quality of perioperative care.

The ACT typically contacts ORs 30 to 50 times a day, either through the electronic medical record, or by texting or calling the anesthesia clinician. Most contacts involve simple nudges and reminders to further personalize care, such as if a patient with a rare heart condition requires close heart rate or blood pressure monitoring.



Stephen H. Gregory, MD, division chief of perioperative medicine, discusses anesthetic management and cerebral perfusion in the ACT during aortic surgery.

When a patient’s status takes a marked turn for the worse, the ACT is either alerted from the monitoring data or called directly. For very rare scenarios that an anesthesia clinician may never have encountered, the team might help synthesize the most current literature and advise on evidence-based management. Sometimes the ACT can act as a sounding board when a clinician has to weigh different management options.

The ACT has on occasion been able to provide just-in-time assistance, even before difficulties arise. “I’ve had the firefighter come into my room before a complication happened, just to say, ‘Hey do you need help? The control tower alerted us,’” said Bernadette Henrichs, PhD, professor of anesthesiology and director of CRNA Education and Research in the anesthesiology department. “It was a big relief. I didn’t even have time to make the phone call and say we needed more help.”

Powering advances in care

The origins of telehealth for the most vulnerable patients in the hospital trace back to early success monitoring patients in the intensive care unit. Washington University became one of the early institutions to show the effectiveness of off-site

telehealth monitoring of ICU patients, often called the eICU.

Spurred by the eICU’s success, Avidan began adapting the concept to perioperative care. After a year of planning the first pilots, the ACT started in 2016 through a series of studies on forecasting algorithms, feedback alerts and feasibility assessments to support translation of the approach, all falling under different phases of the moniker ACTFAST. An important project goal is to develop computer algorithms that may be able to identify patterns suggesting that patients are at risk for specific complications, such as heart attack, respiratory failure, or death. That aspect of the ACTFAST studies includes colleagues from the Department of Computer Science & Engineering.

The original ACTFAST studies garnered nearly \$1 million in grants from the Agency for Healthcare Research and Quality and the National Science Foundation. The group’s current project, The Telemedicine Control Tower for the Operating Room: Navigating Information, Care and Safety (TECTONICS) study, has been funded by a multi-year grant totaling more than \$2.5 million from the National Institute of Nursing Research. The study is on pace to enroll 10,000 patients per year.

A large number of patients is needed to evaluate the ACT’s impact via metrics on quality of care and

Early warning system

The Anesthesiology Control Tower (ACT) is believed to be the first initiative to combine remote monitoring, telemedicine and machine learning to improve the safety and quality of perioperative care. The ACT provides additional sets of eyes and the power of machine learning to detect negative trends in patients’ trajectories before they evolve into medical emergencies. From the ACT in the Northwest Tower, anesthesia clinicians monitor 60 operating rooms at Barnes-Jewish Hospital, serving nearly 1,000 patients per week.



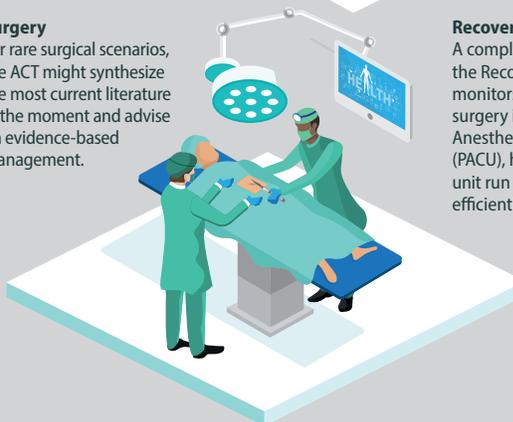
Rapid response

When unexpected events arise, the ACT can marshal and dispatch on-the-ground specialists and other backup resources to ORs.



Surgery

For rare surgical scenarios, the ACT might synthesize the most current literature in the moment and advise on evidence-based management.



Recovery

A complementary initiative, the Recovery Control Tower, monitors patients after surgery in the Post-Anesthesia Care Unit (PACU), helping the unit run more efficiently.





“Fields like anesthesiology and critical care are ripe for technological innovations to enhance the work of clinicians.”

— Michael S. Avidan, MBBCh

postoperative outcomes. One challenge the ACT is tackling is how to predict which patients are most likely to develop a kidney injury related to patient risk factors and other surgery and anesthesiology care issues. Postoperative kidney injury is relatively common; an estimated 13% of patients receiving open abdominal surgery and 25% of patients receiving cardiac surgery experience some reduction in kidney function postoperatively.

The reasons can be manifold, nebulous and unpredictable, ranging from a transient drop in blood pressure while the patient is transferred from the operating table to the stretcher, to a previously unknown interaction between medications. Sifting through the mountains of perioperative data to find early warning signs is something for which machine learning is particularly well suited.

“AI has the power to advance preoperative risk stratification and improve clinical decision support tools to assist with early diagnosis of adverse events and streamlining workflows,” said Omokhaye M. Higo, MD, MBA, inaugural vice chair for innovation in the Department of Anesthesiology. “Our slate of projects ranges from reducing inefficiencies in OR scheduling and turnaround times to improving patient preparation, expectations and experience.”

Beyond South Campus

One major hurdle in incorporating the ACT has been changing the paradigm: introducing the concept of complementary telehealth into the OR environment, which historically has relied exclusively on those clinicians physically present to participate in all aspects of perioperative care.

Though the ACT provides an extra layer of safety to identify patient risks, initially some clinicians were skeptical of the idea. But, for the majority, the ACT has become a valuable backup. “Most of the skepticism has evaporated over time as clinicians have perceived that innovation and technology are not threats, but rather enhancements,” Avidan said.

“The conceptualization of our Perioperative Innovation Center is more akin to ‘phone a friend’ than it is to a sinister ‘big brother.’”

The team is continuing to fine-tune the system and improve its capabilities. “We are currently working on implementation strategies to ensure that the ACT is a sustainable, innovative clinical enterprise, beyond research,” said Joanna Abraham, PhD, associate professor of anesthesiology and a member of the Institute for Informatics, who studies perioperative telehealth workflows and machine learning implementation.

In 2020, work began on the ACT’s complementary initiative, the Recovery Control Tower, which monitors patients after surgery in the Post-Anesthesia Care Unit, or PACU, to help the unit run more efficiently. The project is concluding its initial pilot on two PACU bays.

While clinicians in the Recovery Control Tower monitor patients for emerging issues, they also provide an additional function: communicating with patients directly. Using cameras in patient bays, clinicians can gather patient histories, check vitals and even coordinate discharge remotely, preventing delays by tending to patients as soon as they’re ready to leave the hospital.

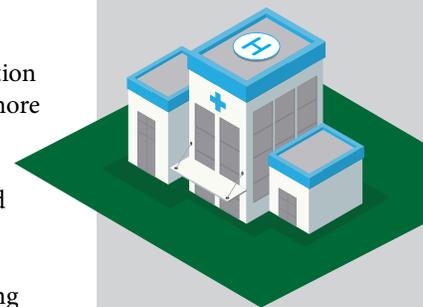
Higo said he hopes the tools developed by the Perioperative Innovation Center will boost the care and efficiencies beyond St. Louis, especially in rural communities that may lack the training and expertise to treat highly complex patients.

“Advances in medicine and an aging population give us opportunities to care for patients with more complex clinical conditions than ever before,” Higo said. “If you couple that with ongoing workforce shortages of anesthesia clinicians and other adverse effects of the pandemic, we are heading into strong headwinds.

“The center prepares us for this by continuing to develop systems that leverage our collective clinical expertise and digital platforms, enabling us to do what we currently do better while finding innovative ways to address and overcome whatever the future brings.” □

Rural communities

Ultimately, these tools will boost the care and efficiencies beyond St. Louis, especially in rural communities that may lack the training and expertise to treat highly complex patients.







EQUITY FOR African Americans in Alzheimer's disease

BY TAMARA BHANDARI

Alzheimer's disease is like two deaths, said Stephanie Griffin, whose father died of the brain disease in 2015.

"It's horrific," she said. "First, you watch them lose the ability to talk, to think, to do any of the things they used to do. And then, to see them pass because of it? It's just ... it's a lot."

Caring for a loved one with this fatal, progressive neurodegenerative disease is heartbreaking and exhausting. The challenges are particularly daunting in the African American community, where the disease is often poorly understood — despite Alzheimer's being about twice as common among African Americans as other Americans.

Yet, African Americans largely have been left out of Alzheimer's studies nationwide. For example, Aduhelm, a controversial Alzheimer's drug approved in 2021, was evaluated in clinical trials involving just 19 people self-identified as Black or African American out of 3,285 volunteers.

Washington University nurse Sarah Goddard administers an antibody infusion to Collins E. Lewis, MD, an associate professor emeritus of psychiatry, who has served for years as a healthy volunteer. He also is a member of the African American Advisory Board.



Lenise A. Cummings-Vaughn, MD, gives a series of neurological tests to Stephanie Griffin as part of a trial for the Memory and Aging Project, which studies cognitive functioning as people age. Griffin's father died of Alzheimer's disease in 2015.

These lower numbers reflect a failure by the mostly white research community to understand how African Americans view Alzheimer's disease and participation in medical research.

Washington University has worked hard to break the national pattern. In 2000, it established one of the country's earliest groups dedicated to increasing African American participation in Alzheimer's research: the African American Advisory Board at the Charles F. and Joanne Knight Alzheimer Disease Research Center (Knight ADRC). Today, African Americans make up 17% of Knight ADRC volunteers, up from 3% in 1999.

"If you only study Alzheimer's in white people, you only learn about Alzheimer's in white people," said John C. Morris, MD, the Harvey A. and Dorismae Hacker Friedman Distinguished Professor of Neurology and the director of the Knight ADRC. "Look at Aduhelm. Doctors just don't know whether African Americans will benefit from it at all, or in the same way, or have the same side effects profile, because we don't have the data."

Alzheimer's is a complex disease. Myriad biological and social factors influence who gets diagnosed, at what age and how quickly the condition worsens. These factors include family history, gender, education level, head injury,

health conditions such as diabetes and high blood pressure, and cultural expectations around aging.

Regarding many of these factors, white and African American communities differ, rendering questionable the practice of using studies of white volunteers to guide care of African American patients. A recent Washington University research study revealed that three experimental blood tests designed to identify people in early stages of Alzheimer's disease perform differently in African American individuals compared with white individuals. (A fourth test, PrecivityAD, based on Washington University technology, performed the same regardless of race.) Such tests, if standardized based on their performance in white populations, could put African American patients at risk of misdiagnosis and receiving inappropriate medical care.

No one looks like me

Washington University is a world leader in Alzheimer's research. Its Memory and Aging Project, one of the earliest long-term studies of the aging human brain, began in 1979 and continues today. The Clinical Dementia Rating instrument, used worldwide to gauge dementia severity, was developed at the university in the 1970s and revised

by Morris in 1993. But when Morris became director of the Knight ADRC in 1998, he noted a disturbing fact: All of this celebrated research had been done in study populations that were 97% white.

“I made a commitment to include more African Americans in our studies, but I had no idea how to do it,” Morris said. “I had no real understanding of the way people in the African American community in St. Louis felt about Barnes-Jewish Hospital.”

Despite his years as a physician in St. Louis, Morris did not fully appreciate that the city’s history of segregation had marginalized people in ways that continued to be felt.

“They (potential volunteers) recalled when Barnes Hospital seemingly only accepted African American patients if they had particularly intriguing medical conditions, and when the African American outpatient clinic was in the hospital basement,” Morris said. “That was more than 50 years ago, and since then Barnes-Jewish Hospital has made efforts to treat all patients equally and with respect. But this history is still painfully remembered by many older African Americans.”

Oblivious to the complexity of the task he had given himself, Morris started trying to recruit family members of his few African American patients. That’s where he got lucky: Norman Seay, a highly regarded civil rights activist and educator, came into his office one day with his mother, a patient of Morris’. Seay agreed to volunteer.

“After Mr. Seay went through the enrollment process, he said to me, ‘John, the entire time I was in your research office I did not see one person of color,’” Morris recalled. “I was so naïve. It had never crossed my mind that if we wanted people of color to feel comfortable volunteering for us, we needed to have a diverse staff. That’s when I knew I was in way over my head. I asked Mr. Seay to help me and the Knight ADRC become more culturally competent. Fortunately for us, he was willing to do that.”

Seay and Morris established the African American Advisory Board, with Seay as the founding chairperson. The board advises the Knight ADRC on cultural sensitivity and appropriate outreach strategies to encourage active participation by African Americans in memory and aging studies.

In 2005, local civil rights leader Norman Seay posed for a St. Louis Post-Dispatch portrait commemorating his March 1964 meeting with the Rev. Dr. Martin Luther King Jr. Seay, who died in 2019, worked for 20 years alongside the Knight Alzheimer Disease Research Center, to build equity in treatment.

A national model

African Americans make up about 20% of U.S. Alzheimer’s patients, but only about 2% of Alzheimer’s clinical trial participants. The greater Alzheimer’s research community has been slow to begin addressing that disparity. In 2019, the National Institute on Aging (NIA) of the National Institutes of Health (NIH) issued guidance on recruiting more diverse populations into Alzheimer’s studies.

By the time the NIA issued guidance, the Knight ADRC had been steadily improving its relationship with the local African American community under the advisory board’s direction over nearly two decades. The board’s success is so impressive that ADRCs in other cities have sent teams to study its methods and bring back ideas to apply in their own communities. The key, according to the Rev. Douglass Petty, PhD, the board’s current chair, is that the board is genuinely empowered to influence how work is done at the Knight ADRC.

“It’s not a ‘We’ll call you when we need you’ arrangement,” Petty said. “We function as a sounding board for all the work that’s being done to build relationships with community organizations. And we’re not a silent group. These are very strong individuals who don’t mind using their voices. Anytime somebody comes to speak to the board, we ask questions. And our input is taken seriously. When grants are written, Dr. Morris always directs the research team to get letters of support from the board members as a way of showing that they have asked for, received and incorporated our input.”

U.S. stats

2x

Alzheimer’s is about twice as common in African Americans as in white Americans

20%

of Americans with Alzheimer’s are African American

2%

of clinical trial participants are African American

African American participation in Knight ADRC:

3%

in 1999

17%

in 2022



DAVID CARSON/ST. LOUIS POST-DISPATCH/POLARIS

Take spinal taps, for example. In this procedure, medical personnel pierce the spinal canal and withdraw small amounts of cerebrospinal fluid, a precious source of molecular clues to what is going on in the brain. But spinal taps have an undeserved reputation for being painful and dangerous, and many African Americans give them a hard pass. The board suggested that African Americans might be more willing to participate in Alzheimer's studies if spinal taps are optional, not required.

The board also educates the local African American community about Alzheimer's disease and the value of study participation. Recently, it produced a 30-second public service announcement with the tagline "Your participation is your power," to be aired on St. Louis-area TV stations.

"Our culture doesn't like to talk about what we consider negative things, and certainly Alzheimer's is one of those," said board member Beverly Foster. "I think it's mostly because we don't understand it. So, my goal has been to share as much information as possible. Black people are at risk because of systemic racism. And Black women are at the most risk because we live longer. That makes it important that we know that while there

is not a cure for Alzheimer's, there are things that we can do to be aware and stay healthy, independent and mobile as long as we can."

Foster, like most of the board members, volunteers for Alzheimer's studies. Board members have spoken at churches, festivals and other community events about the disease and their volunteering experiences to counter the widespread wariness of biomedical research in the African American community. Griffin, who is not a board member, volunteers for ADRC studies and hosts informational sessions at her African American church (see sidebar).

"You can't expect people to participate without acknowledging the history of unethical research involving African Americans, such as the untreated syphilis study, the HeLa cells taken from Mrs. Henrietta Lacks, and the Cold War experiments that happened here in St. Louis, Missouri," said Joyce Balls-Berry, PhD, an associate professor of neurology whose work focuses on promoting health equity.

The Tuskegee Study of Untreated Syphilis involved 400 African American men in Tuskegee, Alabama, who were led to believe they were being

Clinical research specialist Marilyn Wilson (standing) assists Rose Lea Willens during a Brain Aging Cafe at the Northside Youth and Senior Service Center. Coordinated by Joyce Balls-Berry, PhD, an associate professor of neurology, and other staff, the ongoing event includes discussions on brain health, aging, research registries and other opportunities to diversify Alzheimer's care.



MATT MILLER

treated for syphilis for 40 years. In fact, they received no treatment; researchers merely observed them as the disease followed its natural, debilitating course. HeLa cells, the most widely used cells in biomedical research, are derived from cervical cancer cells taken from Lacks, a dying African American woman, without her knowledge or consent. In the 1950s and '60s, the U.S. Army blew the toxic chemical zinc cadmium sulfide into predominantly African American neighborhoods in St. Louis as part of a biological weapons testing program.

Given the history of racial injustice in St. Louis and elsewhere, persuading African Americans to trust the mostly white medical establishment has been tough. But Petty said that Washington University has taken important steps toward proving itself trustworthy.

“After the Michael Brown situation, Washington University recognized and owned the fact that they are a part of this community and that they haven’t done some of the things that they probably could or should have done,” Petty said, referencing the 2014 police shooting of an unarmed, young Black man in Ferguson, a suburb of St. Louis. Brown’s killing set off unrest in Ferguson and galvanized the national Black Lives Matter movement.

“The university has taken concrete steps with diversity, equity and inclusion,” Petty said. “So that has helped, but you never stop. You never take things for granted, because it’s too easy for things to shift. You have to remain vigilant.”

Where do we go from here?

The Knight ADRC has been most successful at including African Americans in observational studies. Increasing African American participation in experimental studies like the Aduhelm clinical trials has been more challenging.

“There’s a big difference between asking volunteers to donate blood and asking them to take a new, untested medication,” said B. Joy Snider, MD, PhD, a professor of neurology who served as the Washington University site leader for the Aduhelm studies. “We definitely see some reluctance among our African American volunteers when it comes to receiving experimental therapies.”

Recruitment, however, is only one part of the problem, as trials often require a considerable commitment. “We may ask participants (and their caregivers) to come in once a month for 18 months to receive a four-hour drug infusion,” she said. “Not everyone has the time or resources to do that. And



Clockwise from bottom left: John C. Morris, MD, director of the Knight Alzheimer Disease Research Center (ADRC); his wife, Lucy B. Morris; Myrtis E. Spencer, community outreach coordinator for the Knight ADRC; and Norman Seay.

for safety and study design reasons, clinical trial participants need to be as healthy as possible, other than the disease under study. Members of historically minoritized communities are more likely than white volunteers to have other health conditions that make them ineligible.”

To address these and other structural problems limiting diversity in Alzheimer’s studies, Morris established the Health Disparities and Equity Core at the Knight ADRC in 2020, the first such core at an ADRC in the country, he said. The core, headed by Balls-Berry, is tasked with incorporating principles of diversity, equity and inclusion into every aspect of the center’s work.

“As a Black woman scientist, I always think about the fact that many times our voices aren’t heard,” Balls-Berry said. “How do we change that? There are a multitude of areas where this type of work will change the dynamic of health in the city of St. Louis and in the bi-state area and, hopefully, at a national level.”

Norman Seay died in 2019, but his legacy of fighting for inclusion in Alzheimer’s research lives on in the board and in the Knight ADRC’s annual Norman R. Seay Lecture on Alzheimer’s disease and equity.

After more than 40 years at the forefront of Alzheimer’s research, Morris has begun thinking of retirement. He has taken measures to ensure that the equity work he started with Seay will continue when he steps down. Morris and his wife, Lucy, have donated \$100,000 to establish an endowment to provide ongoing financial support for the African American Advisory Board’s work.

“We can’t say we understand Alzheimer’s disease until we understand it in all people,” Morris said. “And we won’t understand it in all people until we start doing a better job of studying it in all people. We have a duty to provide the best possible care to all of our patients.” □

African American Advisory Board

Established in 2000, the board counsels the ADRC research team concerning cultural sensitivity and appropriate outreach strategies to increase active, long-term participation of African Americans in memory and aging studies.

- Pastor Douglass Petty, PhD (chair)
- Rev. C. Jessel Strong (vice chair)
- Alexandre Carter, MD, PhD
- Karen Collins, EdD
- Beverley Foster
- Ronald Gregory, EdD
- Joyce Hamilton
- Barbara Herschbach
- Richard King
- Collins Lewis, MD
- Emily Pitts
- Arlene Moore Ross
- Sallie Simmons
- Jesse Swanigan
- Bernice Thompson
- Sidney White



Lenise Cummings-Vaughn, MD, assesses study volunteer Stephanie Griffin.

A volunteer's story

Initially, Stephanie Griffin and her mother, Fannie Bohlen, were in denial about Griffin's father's condition. In 2008, Griffin's father, Ronald Bohlen, began displaying subtle warning signs of Alzheimer's — locking himself out of his office,

locking his keys in the car multiple times, running a stoplight without noticing. These occurrences were unlike Ronald Bohlen, but Griffin and her mother considered them as isolated. It was Stephanie's then-boyfriend and now husband, Ronald Griffin, a clinical operations director at the School of Medicine, who insisted that the family have Ronald Bohlen evaluated by a neurologist.

The Alzheimer's diagnosis was a shock. Ronald Bohlen was a healthy 67-year-old with no family history of Alzheimer's.

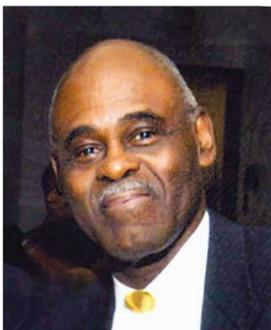
Stephanie Griffin and her mother had no idea of what it meant to live with Alzheimer's, so they educated themselves and participated in support groups to prepare for the Alzheimer's journey. One of the biggest eye openers was the format and lack of diversity in Alzheimer's support groups.

"There are topics that we are guarded about in the African American community," Stephanie Griffin said. "We're not trusting with medical testing,

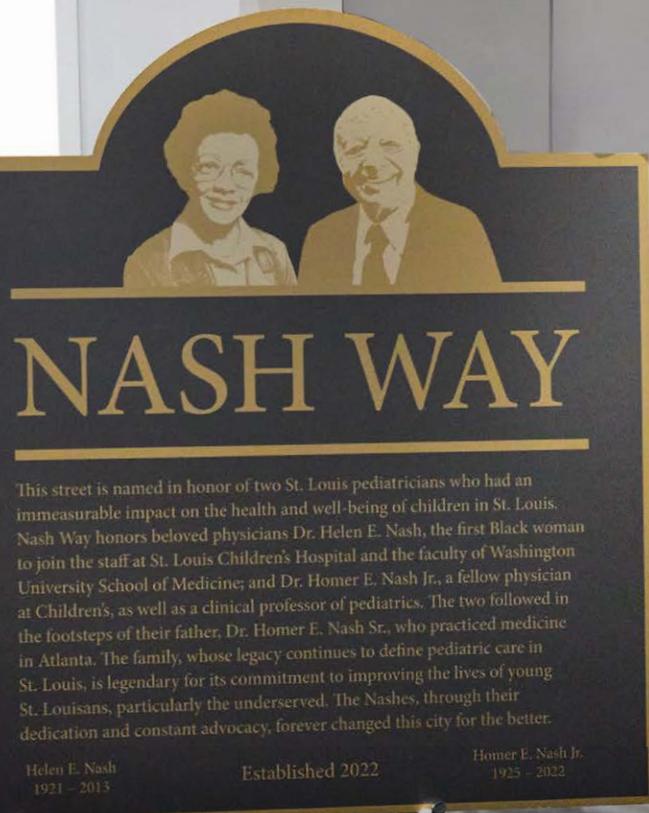
research and things of that nature. So when you have a support group and the idea is for all families to come and talk about their personal experiences, many African Americans are not going to be forthcoming. But just because they're not willing to share their stories, they shouldn't be denied the information."

Stephanie Griffin began volunteering for the Knight ADRC studies in 2013 to understand her individual risk and support research efforts for African Americans. In 2013, she collaborated with the Alzheimer's Association of Greater St. Louis and her church to organize the only St. Louis citywide support group. By 2018, the sessions had grown into monthly informational workshops. The free workshops are designed to provide all families with the resources and information needed to navigate the Alzheimer's journey. The topics and speakers vary monthly. Participants are welcome to anonymously ask questions, and speaking is optional. The meetings are offered in person, live via Zoom, and are recorded for later viewing. The virtual sessions have attracted up to 1,000 viewers, mostly African Americans from St. Louis and beyond. Such sessions have helped countless families cope with the challenges of Alzheimer's disease.

For information about the support group, call 314-550-2301.



Stephanie Griffin's father, the late Ronald Bohlen



Nash legacy honored

A family of doctors defines pediatric care in St. Louis

BY KRISTINA SAUERWEIN

Alison Nash, MD, celebrates the unveiling of a planned plaque that will honor her father and her aunt, the late pediatricians Homer E. Nash Jr., MD, and Helen E. Nash, MD.

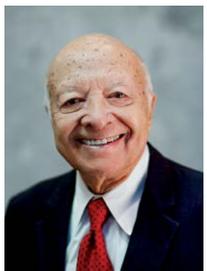
Alison C. Nash, MD, a third-generation pediatrician, understood the importance of health equity in medicine decades before it became a priority in most medical schools and hospitals. She recognized that achieving health equity requires physicians to identify people in need of care, particularly those from disadvantaged communities.

A potential patient could live within walking distance of a doctor's office, but lack the mobility or money for an annual exam. A person in need of mental health treatment could work a job that provides no paid time off, much less insurance benefits that include psychiatric care. Or a person could struggle with a serious condition such as Type 2 diabetes without ever realizing that limited access to nutritious foods, and the inability to pay the higher costs associated with such foods, can be a major disease driver.

St. Louis city employee Marvin Payton installs the new Nash Way street signs on the Medical Campus.



Helen E. Nash, MD



Homer E. Nash Jr., MD

Nash learned this as the daughter of Homer E. Nash Jr., MD, and the niece of Helen E. Nash, MD. Her father and aunt were prominent, ground-breaking pediatricians in St. Louis. For decades, Homer and Helen Nash worked tirelessly to build health equity — through outreach and educational programs and by earning recommendations from family and friends who could vouch for their trustworthiness, compassion and skills.

“I grew up surrounded by the most perfect role models and mentors in life and pediatric health care,” said Nash, now a professor of clinical pediatrics. “My father and aunt chose to establish their pediatric practices in north St. Louis, the community where they lived, and the community whose population was poor, underserved, vulnerable and lacked adequate health care. They built a strong tradition of providing excellent health care to families in the African American community with a whole-family, whole-community approach to treating and preventing illness in children.”

Besides treating generations of children, the Nash family also has influenced hundreds of physicians, trainees and a range of other health-care workers to emphasize health equity in patient care.

To honor the Nashes, Washington University, with support from institutional leaders on the Medical Campus, initiated a street-renaming proposal that, in early 2022, was approved by the St. Louis Board of Aldermen. On Oct. 14, Nash Way replaced Children’s Place between Euclid Avenue on the west to Taylor Avenue on the east.

“The Nash family’s legacy continues to define pediatric care in St. Louis,” said David H. Perlmutter, MD, executive vice chancellor for medical affairs, the George and Carol Bauer Dean of the School of Medicine and the Spencer T. and Ann W. Olin Distinguished Professor. “For decades, the Nash family has fought for children in the community who have lacked access to basic health care. The Nashes embody compassionate medicine by valuing the humanity of patients and their families with kindness, respect and advocacy.”

Indeed, the siblings inspired Alison Nash to continue her aunt’s and father’s legacies by practicing pediatrics at St. Louis Children’s Hospital beginning in 1989. She now treats the grandchildren and great-grandchildren of her aunt’s and father’s doting patients at Nash Pediatrics in north St. Louis.

Continued on page 24



St. Louis Mayor Tishaura Jones (left), Dean David H. Perlmutter, MD (center), and Associate Dean Will Ross, MD, unveil a Nash Way plaque.



MATT MILLER PHOTOS

Donald Suggs (right), the publisher and executive editor of the St. Louis American, who spoke on the Nash legacy, hugs Alison Nash, MD.



Will Ross, MD, welcomes people to the event.



Alison Nash, MD, gets a standing ovation as she reaches the lectern.



Donald Suggs thanks the audience.



Attendees give Alison Nash, MD, a standing ovation.



Trish Lollo, president of St. Louis Children's Hospital and a speaker at the event, applauds during comments from Dean David H. Perlmutter, MD.



Dean David H. Perlmutter, MD, Will Ross, MD, and Andrew E. Newman (right), the chair of the Washington University Board of Trustees, talk after the event.



THE ST. LOUIS AMERICAN

Homer E. Nash Jr., MD, and his daughter, Alison C. Nash, MD, pose in front of a wall showcasing many of the pediatric patients they served over the years.

In addition, she continues the family legacy by serving as a community representative for Children’s Hospital and by mentoring medical trainees on the challenges of community outpatient settings, as well as St. Louis Public School students who plan to pursue medicine and science. Nash also is the medical director of Healthy Kids Express, which sends mobile care units into communities to provide dental and asthma care and screen for hearing and vision abnormalities, lead poisoning and anemia.

“Dad and Aunt Helen grew up during segregation and, despite the inherent roadblocks, they obtained their medical degrees at Meharry Medical College in Nashville, Tenn.,” Nash said. “They then came to St. Louis to undergo medical training at Homer G. Phillips Hospital, a segregated hospital, which was one of the few places in the country Black physicians could get specialty training at that time. During their

training, both experienced firsthand the effects of health inequity on the patients they cared for. This experience solidified a resolve to do all they could to change that. Seeing them in action throughout my childhood inspired me to choose a career in pediatric medicine and work toward health equity.”

Similarly, Helen and Homer Nash were inspired by their father, Homer E. Nash Sr., MD, who graduated medical school in 1910 and practiced general medicine in Atlanta as one of the country’s first Black physicians.

In 1949, Helen Nash started her pediatric practice in St. Louis and became one of the first four Black physicians on the medical school’s clinical faculty; specifically, she was the first Black woman to join the attending staff at Children’s Hospital. There, she helped create one of the earliest specialty wards for premature infants.

From 1994 to 1996, she served as acting dean of minority affairs. In addition to being the recipient of numerous awards, Helen Nash created several scholarships for St. Louis students of all ages who want to pursue careers in medicine and science. Each year, the medical school honors a student with the Dr. Helen E. Nash Academic Achievement Award.

Helen Nash died at age 91 in September 2013.

Before graduating from medical school in 1951, Homer Nash Jr. served in the U.S. Army in Italy during World War II, for which he was awarded a Purple Heart and a Bronze Star. After military service, he moved to St. Louis to train in pediatrics under his sister at Homer G. Phillips Hospital. He opened a practice in the city and became a clinical professor at Washington University.

Later, he joined the medical staff of hospitals affiliated with the university, including St. Louis Children’s, where he participated on multiple committees and advisory boards. Additionally, he worked with the Community Outpatient Practice Experience, a medical training program in community pediatrics.

Homer Nash Jr. died in April 2022 at age 96.

“Although I had excellent training in pediatrics, what I learned about the ‘art’ of medicine and the practice of pediatrics, I learned from my father and my aunt,” Alison Nash said. “Because of the foundation of excellence they established, our patients and families have trust in the care we provide. I consider it a privilege to continue their legacy.” □



Ericka V. Hayes, MD

MATT MILLER

Madame president

Medical Center Alumni Association welcomes new leader

BY MARY LEE

When Ericka V. Hayes, MD '98, came to Washington University as an undergraduate, she felt as though she had finally found a community of like-minded people. That sense of belonging continued when she entered Washington University School of Medicine, where a close-knit cohort of classmates and outstanding mentorship from attendings and residents were catalysts for her success.

It was people — stellar clinicians and researchers Hayes knew from her medical school days — that brought her back to WashU. She returned for a fellowship in pediatric infectious diseases after she completed a pediatrics residency at the University of California, San Francisco. She subsequently joined the faculty in 2006 and became an associate professor of pediatrics and medical director of infection prevention and of the pediatric HIV program at St. Louis Children's Hospital.

Though Hayes recently moved on to a position as professor of clinical pediatrics at the University of Pennsylvania and senior medical director of infection prevention and control at Children's Hospital of Philadelphia, she remains tethered to her alma mater through her leadership of the Washington University Medical Center Alumni Association (WUMCAA). She began a one-year term as president of the organization's executive council in July, when she took the reins from previous president Susan H. Yang, MD '97, HS '01. In this role, Hayes focuses on fostering connections among former students, residents and fellows. The position is a perfect fit for an alumna who deeply values the relationships she cultivated at the medical center over the years.

Q&A

Why did you choose Washington University for medical school?

As an undergraduate at WashU planning to pursue a career in medicine, it's hard to escape the pull of the School of Medicine. Also, I had some research experiences at the medical school when I was an undergraduate. And to be completely honest, I received a scholarship offer. Otherwise I would not have been able to come to such a great school.

How would you describe your experience at the medical school?

The class size at the medical school is relatively small, and our entire group bonded very well. When you have supportive people around you, you really feel you can succeed. I made lifelong friends.

Anatomy lab in my first year was a game changer for me. As an undergrad chemical engineering major, I didn't have much experience with dissection. Anatomy lab was so visceral and real. It was like, "You are now in medical school, and you have great responsibility."

The preclinical courses were very strong, which, in fact, inspired me to go back and serve as co-director of the preclinical pediatrics course for 13 years after I became a faculty member. And the clinical rotations were incredible because of the one-on-one interaction with attendings and residents.

As far as specific experiences, there was the baby I delivered in the emergency room. And my rotation in the NICU was exciting. I had never touched an infant that small before. Sesh Cole (MD, executive vice chairman of pediatrics) was my attending. He was such a great clinician-scientist model for me.

Are there other faculty members who inspired you when you were a student?

Arnie Strauss (MD '70, former director of pediatric cardiology) was my attending during a third-year pediatrics rotation. He was such an incredible teacher, and he connected so well with students. He made us want to learn, to stay up all night reading articles so we might impress him the next day.

As a fourth-year medical student, I had a lot of interactions with the late Jim Keating (HS '69, former director of pediatric gastroenterology and

of the pediatric residency program). What I loved about Dr. Keating was that he expected you to know your stuff, but he also wanted you to know the limits of your knowledge and admit those limits. He was tough, but I never had a problem with him. If I couldn't answer one of his questions, I would say, "I don't know, but I'm going to look it up." In medicine, that's an incredibly important lesson to learn.

Another person who had a big impact on me was David Haslam (HS '94, former associate professor of pediatrics and of molecular biology). He was the attending for my pediatric infectious diseases elective. David gave us a lot of autonomy but also was the kind of reassuring presence you wanted with you on the wards. He helped solidify my interest in the field. Every single case fascinated me. I will never forget my first Kawasaki disease patient. When we gave him intravenous gamma globulin, it was like we snapped our fingers and he was a healthy boy again.

Why did you choose a career in academic medicine?

Academic medicine was the first model I experienced as a medical student. Academic physicians were our teachers, and that was inspiring. When I went into my residency, I considered focusing on clinical pediatrics. But I ultimately chose the academic path because I wanted to be involved in teaching and efforts to improve community health.

Also, for a person like me with a short attention span, academic medicine allows you to do it all. I've done medical education, infection prevention, clinical care and public health. There's never a dull moment.

What led you to accept your new position in Philadelphia?

Like a lot of people, I started reflecting on where I was in my life and career after COVID-19 struck. I needed a new challenge. When the opportunity at Children's Hospital of Philadelphia came up, I thought it would be a great chance for me to grow and serve. The hospital has a well-established quality and patient safety program, and I work closely with that group on things like bioresponse to viral surges. I'm excited about that as well as teaching residents and fellows and having mentorship opportunities.

Continued on page 28

"When you have supportive people around you, you really feel you can succeed. I made lifelong friends."

— Ericka V. Hayes, MD '98



Young Scientist Program



Medical School Musical



Scholarship recipients

Philanthropy in action

The Washington University Medical Center Alumni Association supports student groups, scholarships and endowed professorships.



Endowed Professor Linda J. Pike, PhD



Global Health & Medicine group

Alumni association Philanthropy impact

\$243,411 for student groups

15 organizations funded since 2018

\$160,000 in scholarships

supported medical students in 2022

12 professorships

endowed since 1982

Plus, alumni and former house staff donations via the Annual Fund help meet other ongoing school priorities.

Stay connected to the school and to each other

Membership in the Washington University Medical Center Alumni Association (WUMCAA) is granted automatically to all alumni of the School of Medicine and former medical center house staff. Goals include:

- Forging connections among alumni.
- Recognizing alumni achievements.
- Furthering the standing of the medical center.

WUMCAA's Executive Council of 25 alumni volunteers convenes three times a year. Duties include:

- Allocating funds contributed by alumni and former house staff that are not designated for a specific purpose. These funds support important medical school priorities.
- Selecting recipients of the medical school's annual Alumni Achievement Awards.
- Naming alumni-supported scholarships in honor of outstanding alumni who have served on the medical school faculty.

▶ **For more information**, visit alumni.med.wustl.edu/connect/wumcaa. Contact the WUMCAA at 314-935-9682 or medicalalumni@wustl.edu.

While in school, Ericka Hayes (far left) talks with fellow medical students.



BERNARD BECKER MEDICAL LIBRARY

What do you miss most about WashU after serving on the faculty for more than 15 years?

The people and the relationships. I really could not have asked for a better group to be part of as a trainee, young faculty member and midcareer faculty member than the pediatric infectious diseases division. Every member of the team is remarkable. They are smart and driven but at the same time generous and caring. I wanted to be around them all the time, even when I was not at work.

Why did you agree to join the alumni association executive council and serve as its president?

David Hunstad (MD '95), who directs the pediatric infectious diseases division at Washington University, was president several years ago, and he came to me with the opportunity. As I reflected back on everything Washington University has given me, I wanted to give something back. I believe it's incredibly important for alumni to stay connected to the medical center. Sometimes in our busy lives, we don't have time to think about where we came from and remember there are people coming after us who need help and support. This job is a way for me to help alumni reconnect to that and to each other.

Do you have any goals as president?

My biggest goal is to strengthen communication with alumni about the great things going on at the Medical Campus. Alumni are the medical

center's representatives in the world. When people ask them about WashU, we want them to speak about their experiences, but we also want them to talk about the world-class teaching, research and clinical care that takes place here. That helps with student and faculty recruitment and builds our community. We also are looking at ways to increase interaction between current students and alumni. That's a big priority for us.

What have you enjoyed most about your time on the executive council?

I love hearing from the medical students about their extracurricular activities as part of the council's work to award funding to student groups. They are doing such great things, from teaching about sexually transmitted infection prevention in local schools to producing the annual student musical. I'm also looking forward to the medical school's Celebration Weekend April 21-22. I'll be welcoming back the reunion classes, including my 25th reunion class.

Is there anything else you want alumni to know about the WUMCAA?

The members of the executive council represent all alumni and former house staff, and we want their input. It's really important to make sure we are hearing all voices. Alumni can reach out to us if they have feedback or thoughts about events or engagement opportunities. We want to make sure we are bringing everyone into the circle.

Find your friends.

Classnotes are organized first by year of degree/training completion and then in alphabetical order.

How about you?

Share your news via the online form at med.wustl.edu/classnotes. Submissions will be printed in a subsequent issue of Outlook magazine as space allows. Photos are welcome.

1960s

Pedro Luiz Mangabeira Albernaz, GR '60, HS, is a professor emeritus, Escola Paulista de Medicina, Federal University in São Paulo. He and his spouse have been married for 50 years. His phone number in Brazil is +55-11-98335-7082.

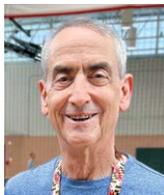
Hillel Tobias, MD '60, is continuing to teach and practice in the field of hepatology. He has retired from his long-held position as medical director of the Liver Transplant Service at New York University Langone Health and has taken a position as professor of medicine and director of hepatology at Lenox Hill Hospital-Northwell Health in New York City, where he hopes to continue for the next few years.

Nicholas Thomas Kouchoukos, MD '61, HS '66, received the Lifetime Achievement Award from The Marfan Foundation March 19, 2022, for his contributions to the surgical treatment of disorders of the thoracic and abdominal aorta that affect patients with Marfan syndrome and related conditions. He is the John M. Shoenberg Emeritus Professor of Cardiovascular Surgery in the Division of Cardiothoracic Surgery at the School of Medicine.



Anita Marguerite Frumson, PT '66, spends half of the year in St. Louis and the other half of the year in Florida. She enjoys biking, tennis, bocce, kayaking, pickleball,

gardening, photography, piano lessons, fostering kittens, volunteering at the wild bird sanctuary, enjoying family and friends and attending concerts.



Earl Hearst, LA '66, MD '69, HS '73, is spending winters in his home in The Villages in Florida and summers in his condo in Maryland. In April, he and his table tennis mixed doubles partner won silver medals in the Florida Senior Olympic Games. This July, Hearst won a gold medal in mixed doubles table tennis, a gold medal in men's doubles table tennis and a silver medal in singles table tennis in the Maryland State Senior Olympic Games.

1970s



Bruce D. Fisher, MD '70, received an Excellence in Teaching Award from the Class of 2022 of Robert Wood Johnson Medical School-Rutgers University in New Brunswick, N.J.



Barbara Cooper Mandell, MD '73 (above, left), has retired. She reports that it was jarring as the pandemic "planned" it, but it turned out well. She moved to Manhattan, N.Y., joined a new synagogue where she sings in the choir and is active in climate

change work. Best of all, her new love is watercolor and art. She is a card-carrying member of the Art Students League of New York. Mandell is also enjoying her growing family.

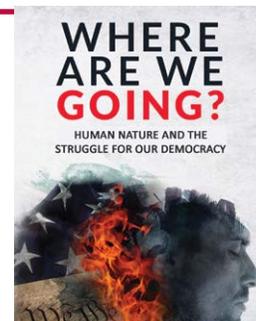
Moon H. Nahm, LA '70, MD '74, retired from the University of Alabama at Birmingham in 2021, after working as a professor for many years, and became an emeritus professor. Nevertheless, he is still active, maintaining his research laboratory on pneumococcal vaccines and helping a biotechnology spinoff company he founded. Nahm enjoyed the delayed 50th year reunion in April and became a proud grandfather in July. "It is amazing how a little baby can bring happiness to many people," he said.

Walter "Walt" Koppenbrink III, MD '76, and **Joan Koppenbrink, GR '75**, celebrated their 50th wedding anniversary in May. Koppenbrink is the third generation in his family to graduate with a medical degree from WashU. His grandfather, Walter Koppenbrink Sr., graduated in 1913, and his father, Walter Koppenbrink Jr., graduated in 1945.

D. Michael Nelson, MD/PhD '77, received The Marfan Foundation 2021 Hero with a Heart award for outstanding care of pregnancies in Marfan syndrome patients over his four decades of managing high-risk pregnancies at Washington University Medical Center. The medical school and the Department of Obstetrics & Gynecology established a new endowment in education, named The D. Michael Nelson, MD, PhD, Education Endowment in Obstetrics & Gynecology. He retired in 2020 and is the Emeritus Virginia S. Lang Professor of Obstetrics & Gynecology. His wife, Peggy, died in February 2022 from COVID-19,



Bruce R. Brodie, MD '70, and his wife, Dora Brodie, MD, had a great time at the WUSM Class of 1970 Reunion last April. He would like to thank the team for putting it all together. At the reunion, Brodie gave a talk on his book "Why Are We Here? The Story of the Origin, Evolution and Future of Life on Our Planet." His second book, "Where Are We Going? Human Nature and the Struggle for Our Democracy," is available on Amazon.



having fought lymphoma for 12 years. She was the light of the Nelson family, including their children Shane, Nathan and Jennie.

Philip Zazove, MD '78, retired effective July 1, 2022, from his role as chair of family medicine at the University of Michigan. An emeritus professor, he plans to focus his retirement on his grandchildren, writing non-medical books, travel, spending time with his spouse, Barb, and the family nonprofit foundation, the Louise Tumarkin Zazove Foundation.



Cecil James "Jim" Holliman, MD '79, recently returned from teaching prehospital trauma care courses in Kyiv, Ukraine. The courses were conducted through the auspices of the International Medical Corps and the Harvard Humanitarian Initiative. The courses were well received, and he thinks they will help improve trauma care in Ukraine.



Robert E. Keating, DE '79, recently retired after 40 years in the private practice of general dentistry in Ventura, Calif. He is looking forward to having more time to go

mountain biking, play his guitar, enjoy his grandchildren and travel the country with his wife in their fifth-wheel trailer.

1980s

Tom Lassar, LA '73, HS '80, retired from his 41-year career — along with his wife, **Jane Laubheim Lassar, LA '73** — in Tucson, Ariz. He previously served as professor of medicine/interventional cardiology at the University of Arizona College of Medicine and associate director of Cardiac Cath and Intervention at Banner-University Medical Center. Other prior faculty appointments include: assistant professor of medicine at the University of Wisconsin School of Medicine, Milwaukee Clinical Campus, and associate professor of medicine at Case Western Reserve University School of Medicine. Lassar has

been the primary or co-author of more than 100 peer-reviewed abstracts and publications and site principal investigator or co-investigator on over 75 clinical trials. He also is a speaker-consultant for Chiesi pharmaceutical company and a research associate for Translational Research Institute for Space Health (TRISH), with a focus on mechanical device cardiopulmonary resuscitation in zero and microgravity environments.

Aaron Hamvas, MD '81, HS '90, has been the division head of neonatology at the Ann & Robert H. Lurie Children's Hospital and Northwestern University Feinberg School of Medicine since 2014. He continues his work investigating genetic contributions to childhood lung disease. He received the 2022 Founders' Award from the Midwest Society for Pediatric Research for contributions to academic pediatrics.



Robert E. Barnett, MD '82, HS '86, retired from obstetrics-gynecology private practice in 2021, but is still active as a labor and delivery hospitalist with OB Hospitalist Group.

He also serves with Baptist Health System of Memphis, Tenn., as chief medical officer for Baptist Union County Hospital.



Timothy J. Caruso, PT '82, invites you to join him as he celebrates being a physical therapist for over 40 years and the 17th birthday of The Kids

Equipment Network (TKEN). Caruso is president and co-founder of TKEN, a not-for-profit organization dedicated to providing durable medical and adaptive equipment to children with special needs, ages birth to 21, who have little or no funding. Since 2005, TKEN has helped over 3,300 children obtain over 4,000 pieces of equipment to maximize independence and improve their quality of life at no cost. A piece of medical equipment is often the difference between a life of dependence and a life of independence. Learn more at tken.org.



Patrick Meehan, MD '82, is medical director of a nonprofit multispecialty group, MLK Community Medical Group, in Compton, Calif.

Linda Knapp Struckmeyer, OT '82, was elected secretary of the American Occupational Therapy Association. She will serve through 2025.

Edward Fry, MD '83, HS '90, formerly an interventional cardiologist, now practices general cardiology at Ascension St. Vincent Heart Center in Indianapolis, where he lives with his wife, **Kathleen Bruns Fry, OT '78, GR '89**.

Dawn Marie Groten, MD '83, was appointed chief of primary care services at Napa State Hospital by California Gov. Gavin Newsom. The hospital has 1,200 patients and is one of five state mental health facilities in California. Groten lives with her husband, Bill Parks, in Napa, Calif.

Heather Edwina Gantzer, MD '85, is now a fellow of the Royal College of Physicians and hopes to travel to the U.K. in the coming year to meet with her colleagues across the pond.

Sari R. Levine, MD '85, recently retired. Her last day in private practice was May 27, 2022, almost 31 years after she started there. Levine is still considering the next chapter, but is happily enjoying time in her garden.

Howard Yerman, MD '85, reports that he has no new job, has not received any awards and has not changed careers. He is still making use of his WashU education at the same place in suburban Detroit that he has been at for the past 30 years. Yerman also still enjoys his solo private practice in otolaryngology (*most days*). He hopes all his fellow grads also have enjoyed fulfilling careers. More importantly, Yerman said he hopes his alma mater "is continuing to train compassionate and qualified new physicians who shun corporate employment so he has folks" to take care of him.

Stephan Floyd Taylor, MD '88, recently was appointed as the inaugural Albert J. Silverman, MD, CM, Research Professor of Psychiatric Disorders at the University of Michigan.

1990s

Jerry Freund, MD '90, now 82, is the only member of his class who graduated as a member of the American Association for Retired Persons. Medicine was his third profession — he first served as a United Church of Christ pastor, then earned a doctorate in clinical psych. After many years counseling his fellow clergy and families, Freund felt the call to medicine. As a family practice doctor, Freund established a rural health clinic in North Carolina, then worked in Morgan County, Ohio, the most economically depressed in the state (17% unemployment), then in rural outpatient clinics near Roanoke and Danville, Va. At that point, Freund felt called to a hospital in Kenya, where he worked for six months in general practice and in the AIDS clinic. He returned home in 2005 and worked as music and Christian education director in his home church, south of Roanoke, where his wife, Elizabeth, served as a Methodist elder. When she was called to serve a church on the Eastern Shore of Virginia, Freund found a job teaching anatomy and physiology, plus microbiology at the community college there. After almost 12 years of teaching, he retired and began serving as a pianist and organist for local churches. (At 9 a.m. on Sundays, Freund plays at one church and then at 10:30 a.m., he is at the other one.) Freund shares that it has been a very full life, and he lives in expectation for what future doors God will open for him and his wife. "Greetings to all fellow alumni!" he writes.



Misti L. Galves Timpson, MSPT '92, DPT, PhD (shown above, second from left), was awarded The Hartgraves Award for Excellence in Teaching (2022), which is the highest honor designated for an active faculty member at Rocky Mountain University of Health Professions. She teaches full time as an associate faculty member.

Elizabeth Anne Davis, MSPT '94, took the National Physical Therapy Exam again in 2021 and reactivated her license after 20 years away from physical therapy raising her four children. For the past year, Davis has been happily back in the career she loves, caring for the elderly in her home health position in Charlotte, N.C.



Bryan John Gibby, MSPT '95, was awarded the 2022 Professional Service Award by the Idaho State University Physical Therapy Program for assisting in teaching

total contact casting and assisting in wound care education for 16 years. He works as a wound specialist at the St. Luke's Elks Wound Clinic in Boise, Idaho, specializing in diabetic foot ulcers.

2000s

Sara E. Clark, LA '99, MSOT '00, is the academic fieldwork coordinator for Western Michigan University's Occupational Therapy Programs (OTD doctoral degree and OTA occupational therapy assistant/bachelor's degree) in Grand Rapids and Kalamazoo, Mich.

Katherine Y. King, MD/PhD '03, recently became the co-director of the Medical Scientist Training Program at Baylor College of Medicine.

2010s

Craig Adam Press, MD/PhD '10, was recruited as an associate professor to Perelman School of Medicine and Children's Hospital of Philadelphia to become the inaugural medical director of the Neuroscience Unit, created to support children with specialized medical and surgical neurological needs.

Greer Mackie, DPT '13, opened a private-practice physical therapy clinic called PhysioDEN on South Broadway in Denver, Colo. She specializes in all orthopedics, sports injuries, chronic pain, post-concussion syndrome and headache.

Katherine Bligard, MA '13, MD '15, HS '22, joined the Maternal-Fetal Medicine practice at WUSM after completing a residency and fellowship training at WUSM/Barnes-Jewish Hospital. She will be specializing in prenatal diagnosis and fetal surgery, including prenatal surgery for spina bifida and twin-to-twin transfusion syndrome.

Erin McDaniel Longbrake, GM '16, HS '16, is the national principal investigator for a seminal, multicenter, investigator-initiated clinical trial of radiologically isolated syndrome (cellostudy.org). The trial is now recruiting, and the team anticipates that the data derived from this study will shed important light on the very earliest immune changes leading to multiple sclerosis.

Bree Goodman (Porcelli), MD '17, and **Jared Vega Goodman, MD/PhD '21**, welcomed their baby girl, Margot, in June 2022.



Joanna Frantz is ringside as equestrian Kate Shoemaker gets ready to compete.

Joanna Frantz, LA '00, MSPT '02, DPT '07, has been working with the U.S. Para Dressage Team as its physical therapist over the last few years. Frantz has seen how this sport and para-sports overall has excelled. This summer, the team traveled to Denmark for the Fédération Equestre Internationale (FEI) World Championships and came home with a team bronze and several individual medals, qualifying for the 2024 Summer Paralympics in Paris! While Frantz knows these four athletes have put in the time, effort and work to prove themselves on the world stage, she also knows that her training and expertise have helped them improve as equestrians and as athletes. It has been a great journey getting to know them, being creative in her treatments and seeing the successes along the way. Frantz hopes to continue to share their story as they prepare for the next Paralympic Games.



Emil Raphael Unanue, MD, an internationally renowned immunologist at the School of Medicine, died Dec. 16, 2022, surrounded by family in St. Louis after a two-year battle with glioblastoma. He was 88.

Unanue served as head of the school's Department of Pathology & Immunology from 1985 to 2006. He built the department into a preeminent research powerhouse in immunology, and did so while making major discoveries about the immune system that transformed the field.

"We have lost a titan of science whose breadth and depth and understanding of life will be impossible to replace," said Richard J. Cote, MD, the Edward Mallinckrodt Professor and head of the Department of

Pathology & Immunology. "Although he is gone, his passion for excellence and discovery will continue to stimulate us to be the best scientists that we can be."

The Paul and Ellen Lacy Professor of Pathology & Immunology, Unanue is well-known for his work to understand how the immune system identifies foreign protein fragments, or antigens — a first step in mounting an immune response — and how the immune system's T cells respond. Unanue's work opened the door for research into therapies for autoimmune diseases such as Type 1 diabetes, multiple sclerosis and rheumatoid arthritis, which are caused by misdirected immune responses.

Unanue spurred critical findings that have moved medicine closer to being able to improve the body's defenses against diseases while preventing misdirected immune attacks on the body's normal components.

"As busy and profoundly successful as he was as a researcher, teaching and mentoring were also deeply important to him," said Robert D. Schreiber, PhD, the Andrew M. and Jane M. Bursky Distinguished Professor and director of the Bursky Center for Human Immunology and Immunotherapy Programs at Washington University. "Through the Graduate Program in Immunology that he created at the university, he helped populate academia and industry with many of the most respected scientists in the field. His impact can't be overstated."

His honors include the Albert Lasker Basic Medical Research Award; the Canada Gairdner International Award, Canada's highest award in science; the Robert Koch Gold Medal Award in

Germany; the Sanofi-Institut Pasteur Award; and the Gerold and Kayla Grodsky Basic Research Scientist Award from the Juvenile Diabetes Research Foundation. He also received the Lifetime Achievement Award from the American Association of Immunologists and was an elected

"We have lost a titan of science whose breadth and depth and understanding of life will be impossible to replace."

— Richard J. Cote, MD

member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the National Academy of Medicine.

A native of Havana, Cuba, Unanue graduated from the University of Havana School of Medicine in 1960, a year after Fidel Castro overthrew the Cuban government. Wanting to be the architect of his own life, he left Cuba for the United States that year, before Castro imposed travel restrictions on residents.

He completed an internship in pathology at Presbyterian University Hospital in Pittsburgh; a pathology research fellowship at Scripps Clinic and Research Foundation in La Jolla, Calif., with the renowned immunopathologist Frank Dixon; and then an immunology research fellowship at the National Institute for Medical Research in London, where he worked with famed immunologist Brigitte Askonas.

Unanue returned to Scripps and then was recruited by eventual Nobel laureate Baruj Benacerraf to Harvard Medical School, before he began a long career at Washington University.

A true Renaissance man, Unanue was known for his love and legendary knowledge of opera and was a longtime supporter of the Opera Theatre of Saint Louis, The Metropolitan Opera in New York and the Santa Fe Opera.

Unanue is survived by his wife of more than 58 years, Marianne; his children, Marie Unanue (Chris Georgen), Rachel Rose (Scott) and David Unanue (Laura); his brother, Alberto Unanue; and six grandchildren.

A celebration of his life will take place in 2023.

1940s

John P. Adams, MD '45; October '22

Kathleen M. Bonadies, NU '48; March '22

Elmer K. Brake, DE '46; April '22

Edward M. Malashock, HS '47; May '22

Ralph S. Riffenburgh, HS '49; April '22

Lewis F. Wesselius, MD '49; March '22

1950s

Marian Dillie Auer, NU '55; June '22

N. David Charkes, MD '55; April '22

Janolyn M. Hardin, OT '59; May '22

Erwin R. Rabin, LA '52, MD '56; May '22

Marion L. Stahl, HS '50; March '22

Arthur O. Von Rump, DE '57; July '22

Mary Ann Weisenborn, NU '53; March '22

1960s

Eugene S. Clarke, DE '65; May '22

Stanley C. Condon, HS '64; March '22

Arvin J. Crose, DE '63; March '22

John Stanley Dillon, HS '62; June '22

Paul A. Ducommun, NU '67; April '22

Judy Hartline Elbring, NU '66; April '22

Gene M. Kuehn, HS; July '22

Walter Lauren Johnson, HS '64; April '22

Don J. Lamb, DE '69; March '22

James B. Lyon, DE '66; August '22

David L. Nelson, MD '63; June '22

Richard I. Porter, MD '63; May '22

Ned L. Snider, MD '62; May '22

Robert Sidney Wilroy Jr., HS '61; May '22

1970s

Daniel E. Carruthers, PT '72; May '22

Neal A. Schai, DE '71; April '22

1980s

Timothy H. Barzegar, DE '88; May '22

Gary Patrick Mares, DE '81; July '22

1990s

Rachel Mary Guest, HS '99; June '22

Tonya Yvette Standifer Smith, PT '99; September '22



Inspiring example

The distinguished career of Will Ross, MD, MPH, Alumni Endowed Professor of Medicine, Division of Nephrology, and associate dean for diversity, was celebrated with an unveiling of his portrait at the Eduardo Slatopolsky Lecture in Renal and Electrolyte Disorders on Dec. 15. Ross is renowned at the medical school for his excellence in patient care and teaching, as well as his dedication to the medically underserved. The oil painting now hangs outside of the Office of Admissions. "I am extremely humbled to be memorialized with this portrait," Ross said. "I have endeavored to ensure every human is treated with dignity and respect — I did not expect such accolades in return."



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Light over darkness Pramodh Ganapathy (bottom left), a fifth-year medical student, choreographed a Bollywood-style dance featuring medical students across classes to celebrate Diwali Nov. 11 in Shell Café. The medical school's South Asian community annually celebrates Diwali, the Hindu Festival of Lights, with a vibrant evening of artistic activities. A band started by MD-PhD students Kalyan Tripathy and Lindsey Brier and now radiology resident Chris Mejias, MD, played a set of popular Hindi songs for their ninth consecutive year. Afterward, attendees decorated *diyas* (clay lamps) led by event organizer Sanji Bhavsar, a second-year medical student (right).



MATT MILLER PHOTOS

